DOCUMENT RESUME

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ABSTRACT

A computer program designed to produce summary information on the data processing volume of the Southwest Regional Laboratory's (SWRL) Instructional Management System (IMS) is described. Written in FORTRAN IV for use on an IBM 360 Model 91, the program sorts IMS input data on the basis of run identifier and on the basis of classroom identification number. Totals are then given for the number of tests taken by class, number of update and delete records submitted for each class, and the number of pages of output reports produced for each class. This document is intended to serve as the software documentation for the program. Included are a program description, data format specifications, program constraints and limitations, and operating instructions including the appropriate job control language (JCL). Program flowcharts, program listings, and sample reports are also included. (DGC)

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SOUTHWEST REGIONAL LABORATORY
TECHNICAL NOTE

DATE: October 27, 1972

NO: TN 5-72-58

TITLE: SUMMATION OF IMS VOLUME FREQUENCIES

AUTHOR: Frank Gordillo

ABSTRACT

This document describes a computer program which sums and reports IMS volume data from the 1971-72 IMS data base.

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SUMMATION OF IMS VOLUME FREQUENCIES

Frank Gordillo

1.0 - PROGRAM IDENTIFICATION

IMS Data Base Summation

2.0 - OBJECTIVE

The purpose of this program is to sum and print a summation of tallies of IMS Volume Data.

3.0 - PROGRAM DESCRIPTION

3.1 - Program Narrative

Sorts on run number and class identification number. Sums are given on the number of tests taken, the number of deletes, the number of updates, and the number of pages per test unit per class within run number. Total sums are given on the number of tests taken, the number of deletes, the number of updates and the number of pages over all tests units per class per run number.

Final totals are given on the above over tests units over classes per run number.

Sort on class identification number. Sums are given on the number of tests taken, the number of deletes, the number of updates and the number of pages per class. A grand total of the above is given.

3.2 - Variables and Internal Tables

Integer Arrays:

IDLET - This value signifies the number of students deleted from class roster.

IHEAD - An array used as a summy area for sort.

INUMR - This value represents the RUN NUMBER and CARD ID.

IONE - This array is used to denote three classification variables: DISTRICT, SCHOOL and TEACHER.

IOPGS - This value denotes the number of test passed through the scanner as recorded by OPSN.

ITEST - This value indicates the number of test processed.

ITWO - This array is used to signify three classification variables: PROGRAM, GRADE and CLASS.

IUNIT - This value represents the test unit identification code.

IUPDT - This value represents the number of students that were added to class roster.

LIST - An array that contains the pointers to the record in the input file after sorting.

Integers:

COMP - Is a flag that tells which sort keys to use.

COMPAR - A variable which tells the relationship of one record to another.

COMPAR = -1 when the difference between the two records is negative.
COMPAR = Ø if the difference is zero.
COMPAR = 1 if the difference is positive.

I - Is an index to the array list which contains the pointers to the sorted records.

IFLAG - Is the flag that indicates first sorted record.

IPAGE - Counts the lines to tell when to eject the page.

N - Counts the number of cards in the IMS Data Base.

NFLAG - Is a flag indicating first input record.

3.3 - Input/Output Arguments
Output: COMPAR
IHEAD
LIST
N

See Section 3.2

4.0 - SUBROUTINES AND FUNCTIONS

Integer Function COMPAR(I,J) -
Sets up the sort keys and the order of the sort. I and J

are the input arguments to COMPAR from SORT.

INTEGER FUNCTION SORT(LIST,IHEAD,N,COMPAR) -
Performs a pointer sort. LIST is an output argument. IHEAD is a dummy array used for scratch area. N and COMPAR are input arguments. See TN 5-71-98 and TN 5-72-07.

5.0 - DATA SPECIFICATIONS

5.1 - Input Formats
See Attachment 1

4.2 - Output Formats
See Attachment 2

6.0 - PROGRAM CONSTRAINTS AND LIMITATIONS

6.1 - Programming Language
FORTRAN IV (G and H)

6.2 - Vendor
Campus Computing Network
University of California
Los Angeles, California

6.3 - Storage Requirements
Compile - 108K
Execute - 98K
Number of I/O requests - 521

6.4 - Hardware Configuration
IBM 360/91 KK MVT, Punched Cards

6.5 - Program Parameters
Maximum is 850 records that can be processed by the program.

6.6 - Error Messages

Messages	Action
Exceeded Array	Terminate Processing

7.0 - OPERATING INSTRUCTIONS

```
// Job Card
// Password
// EXEC FORTGCG,RG=300K
//FORT.SYSIN DD *
Program Deck
/*
//GO.FT06001 DD SYSOUT=A,DCB=(RECFM=FBA,LRECL=133,BLKSIZE=3458),
```

```
// SPACE=(TRK,(50,50),RLSE)
//GO.SYSIN DD *
Data Deck
/*
//
```

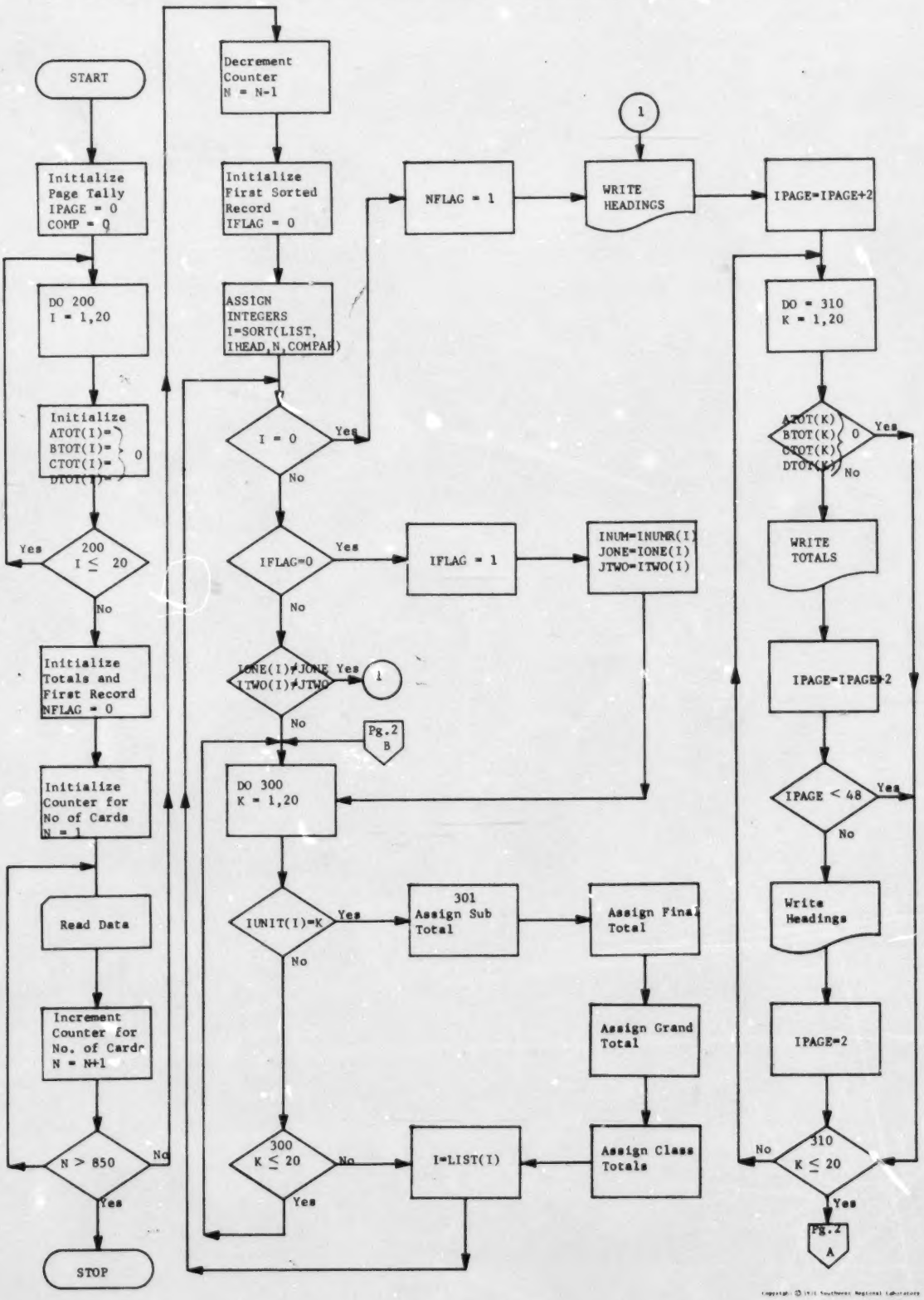
8.0 - PROGRAM FLOWCHART

SWRL

FLOWCHART LAYOUT FORM

PROGRAMMER: Frank Gordillo DATE: 10-23-72

PROGRAM ID: SUMMATION OF IMS FREQUENCIES PAGE 1 OF 4



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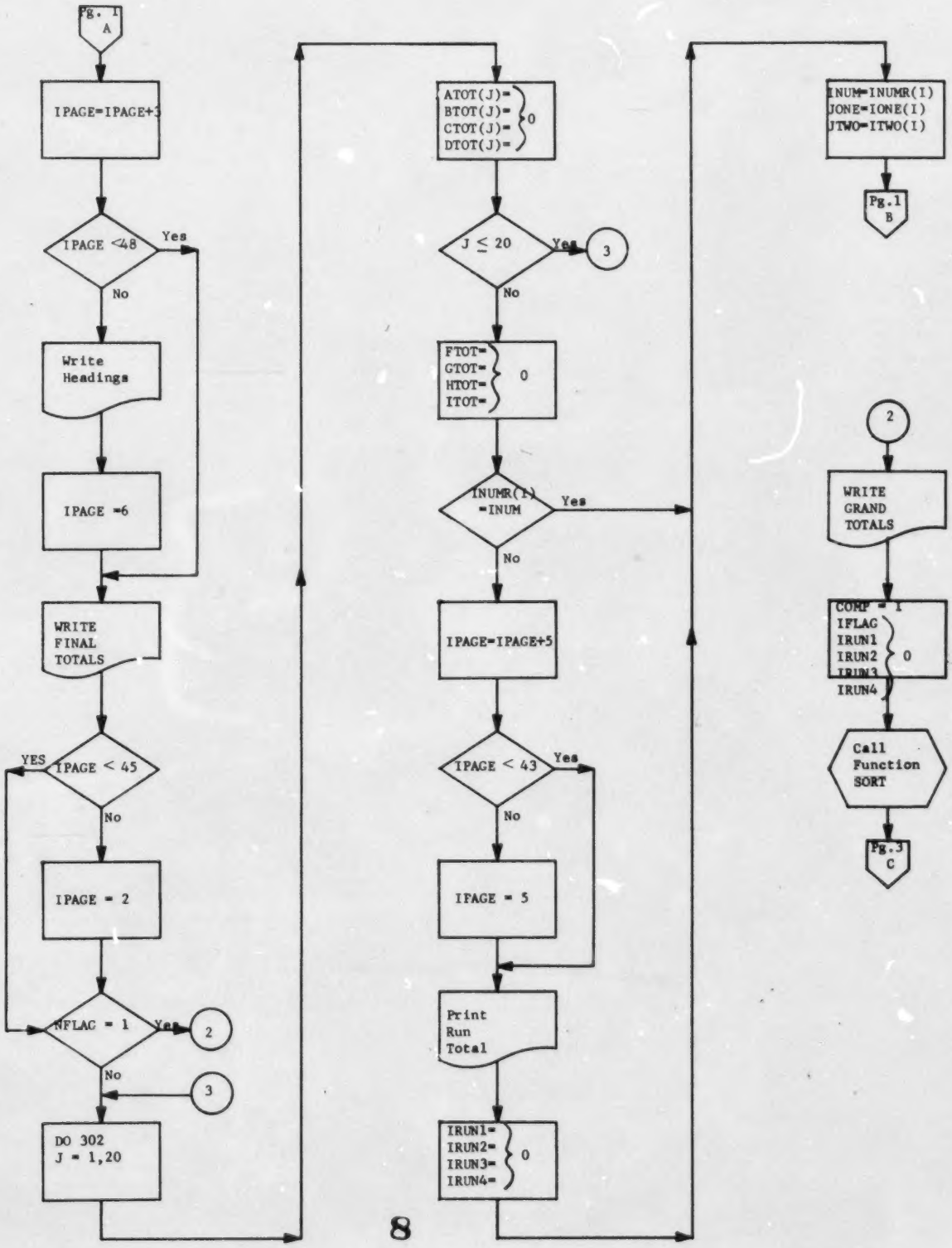
Flowchart Layout Form

Programmer: Frank Gordillo
Date: 10-23-72
Program ID: SUMMATION OF IMS FREQUENCIES
Page 2 of 4



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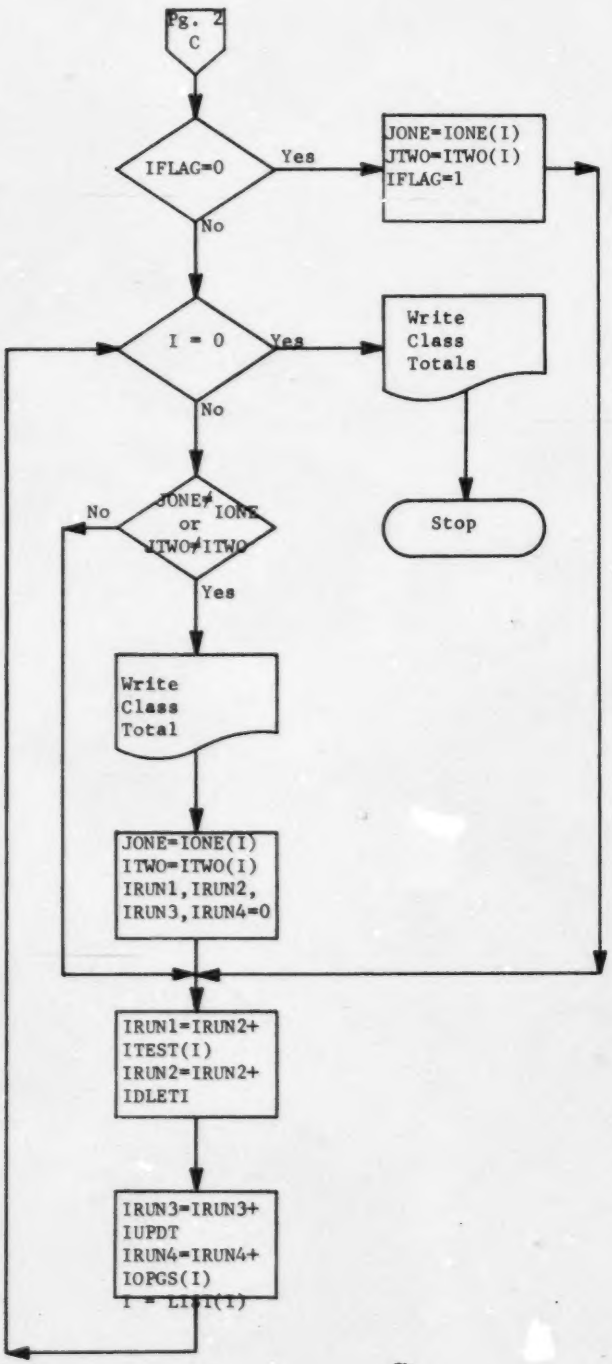
Flowchart Layout Form

Programmer: Frank Gordillo Date: 10-23-72

Program ID: SUMMATION OF IMS FREQUENCIES Page 3 of 4



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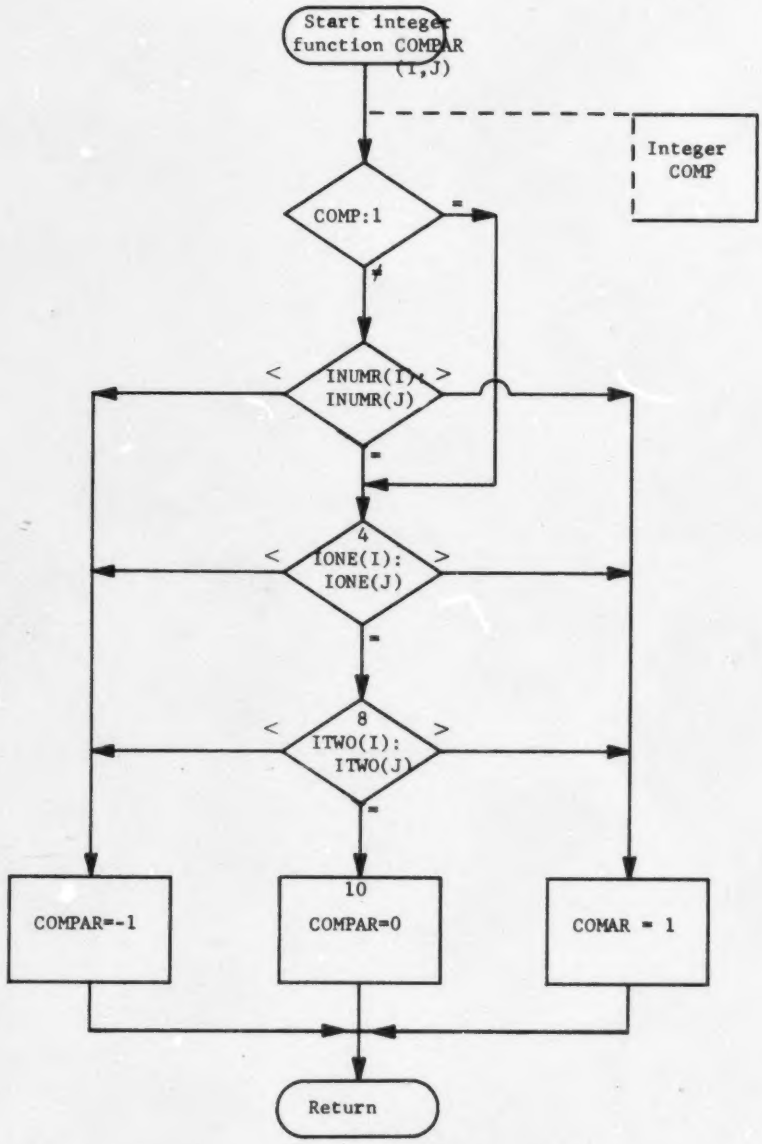
FLOWCHART LAYOUT FORM

PROGRAMMER: Frank Gordillo
PROGRAM ID: SUMMATION OF IMS VOLUME FREQUENCIES
DATE: 10-13-72
PAGE 4 OF 4



```
      INTEGER FUNCTION COMPAR(I,J)
      INTEGER COMP
      COMMON/X11/COMP
      COMMON/X10/IONE(850),ITWO(850),INUMR(850)
      IF(COMP.EQ.1)GO TO 4
      IF(INUMR(I)-INUMR(J))2,4,6
    2 COMPAR=-1
      RETURN
    6 COMPAR=1
      RETURN
    4 IF(IONE(I)-IONE(J))2,8,6
    8 IF(ITWO(I)-ITWO(J))2,10,6
   10 COMPAR=0
      RETURN
      END
      INTEGER ATOT(20),BTOT(20),CTOT(20),DTOT(20),FTOT,GTOT,HTOT
      DIMENSION LIST(850),IHEAD(850)
      DIMENSION INUMR(850),IONE(850),ITWO(850),IUNIT(850),ITEST(850),IDL
     -ET(850),IUPDT(850),IOPGS(850)
      INTEGER COMPAR,SORT
      INTEGER COMP
      COMMON/X11/COMP
      COMMON/X10/IONE,ITWO,INUMR
      EXTERNAL COMPAR
      WRITE(6,400)
  400 FORMAT('1')
C     PAGE TALLY
      IPAGE=0
      COMP=1
C     SORT ON RUN NO. & ID NO.
      DO 200 I=1,20
      ATOT(I)=0
      BTOT(I)=0
      CTOT(I)=0
  200 DTOT(I)=0
      FTOT=0
      GTOT=0
      HTOT=0
      ITOT=0
      ITTOT=0
      IDTOT=0
      IUPTOT=0
      IOPTOT=0
      IRUN1=0
      IRUN2=0
      IRUN3=0
      IRUN4=0
      NFLAG=0
C     HEAD DATA
      N=1
    4 READ(5,1,END=2)INUMR(N),IONE(N),ITWO(N),IUNIT(N),ITEST(N),IDLET(N)
     -,IUPDT(N),IOPGS(N)
    1 FORMAT(1X,I5,1X,2I6,I2,3X,I5,4X,I2,3X,I2,I5)
      N=N+1
      IF(N.GT.850)GO TO 3
      GO TO 4
C     END READ
    2 N=N-1
```

```
C      SORT DATA
       IFLAG=0
       I=SORT(LIST,IHEAD,N,COMPAR)
   66  IF(I.EQ.0)GO TO 5
C      MATCH CHECK
       IF(IFLAG.EQ.0)GO TO 6
       IF(IONE(I).NE.JONE.OR.ITWO(I).NE.JTWO)GO TO 8
C      RECORDS MATCH
  303  DO 300 K=1,20
       IF(IUNIT(I).EQ.K)GO TO 301
  300  CONTINUE
       GO TO 67
C      TALLIES
  301  ATOT(K)=ATOT(K)+ITEST(I)
       BTOT(K)=BTOT(K)+IDLET(I)
       CTOT(K)=CTOT(K)+IUPDT(I)
       DTOT(K)=DTOT(K)+IOPGS(I)
C      FINAL TOTALS
       FTOT=FTOT+ATOT(K)
       GTOT=GTOT+BTOT(K)
       HTOT=HTOT+CTOT(K)
       ITOT=ITOT+DTOT(K)
C      GRAND TOTALS
       ITTOT=ITTOT+FTOT
       IDTOT=IDTOT+GTOT
       IUPTOT=IUPTOT+HTOT
       IOPTOT=IOPTOT+ITOT
       IRUN1=IRUN1+ATOT(K)
       IRUN2=IRUN2+BTOT(K)
       IRUN3=IRUN3+CTOT(K)
       IRUN4=IRUN4+DTOT(K)
   67  I=LIST(I)
       GO TO 66
C      NEW CLASS
    8  WRITE(6,18)IRUN,JONE,JTWO
   18  FORMAT('0',5X,10HRUN NUMBER,5X,8HCLASS ID,6X,9HTEST UNIT,7X,10HTES
      -T TAKEN,7X,14HNO. OF DELETES,4X,14HNO. OF UPDATES,10X,12HNO. OF PA
      -GES/7X,I5,7X,2I6)
       IPAGE=IPAGE+2
       DO 310 K=1,20
       IF(ATOT(K).EQ.0.AND.BTOT(K).EQ.0.AND.CTOT(K).EQ.0.AND.DTOT(K).EQ.0
      -)GO TO 310
       WRITE(6,13)K,ATOT(K),BTOT(K),CTOT(K),DTOT(K)
   13  FORMAT(' ',39X,I2,12X,I5,15X,I3,15X,I3,17X,I6/)
       IPAGE=IPAGE+2
       IF(IPAGE.LT.48)GO TO 310
       WRITE(6,311)
  311  FORMAT('1',36X,9HTEST UNIT,7X,10HTEST TAKEN,7X,14HNO. OF DELETES,4
      -X,14HNO. OF UPDATES,10X,12HNO. OF PAGES//)
       IPAGE=2
  310  CONTINUE
       IPAGE=IPAGE+3
       IF(IPAGE.LT.48)GO TO 599
       WRITE(6,311)
       IPAGE=6
C      PRINT FINAL TOTALS
  599  WRITE(6,14)FTOT,GTOT,HTOT,ITOT
   14  FORMAT('0',53X,I5,1X,2H**,12X,I3,1X,2H**,12X,I3,1X,2H**,14X,I6,1X,
```

```
     -2H**/)
      IF(IPAGE.LT.45)GO TO 312
      IPAGE=2
      WRITE(6,400)
  312 IF(NFLAG.EQ.1)GO TO 304
      DO 302 J=1,20
      ATOT(J)=0
      BTOT(J)=0
      CTOT(J)=0
  302 DTOT(J)=0
      ETOT=0
      GTOT=0
      HTOT=0
      ITOT=0
      IF(INUMR(I).EQ.INUM)GO TO 305
      IPAGE=IPAGE+5
      IF(IPAGE.LT.43)GO TO 699
      WRITE(6,400)
      IPAGE=5
  699 WRITE(6,111)IRUN1,IRUN2,IRUN3,IRUN4
  111 FORMAT('0',19X,15H***RUN TOTAL***,19X,I5,1X,3H***,10X,I4,1X,3H***,
     -10X,I4,1X,3H***,13X,I6,1X,3H***///)
      IRUN1=0
      IRUN2=0
      IRUN3=0
      IRUN4=0
  305 INUM=INUMR(I)
      JONE=IONE(I)
      JTWO=ITWO(I)
      GO TO 303
C     LAST RECORD ENCOUNTERED
    5 NFLAG=1
      GO TO 8
C     FIRST RECORD USED
    6 IFLAG=1
      GO TO 305
C     DONE
    3 WRITE(6,10)
   10 FORMAT('1 EXCEEDED ARRAY')
      GO TO 999
C     PRINT GRAND TOTALS
  304 WRITE(6,313)ITTOT,IOTOT,IUPTOT,IOPTOT
  313 FORMAT('0',17X,19H****GRAND TOTAL****,16X,I6,1X,4H****,7X,I6,1X,4H
     -****,7X,I6,1X,4H****,11X,I7,1X,4H****)
C     SORT ON ID NUMBER ONLY
      WRITE(6,400)
      COMP=1
      IFLAG=0
      IRUN1=0
      IRUN2=0
      IRUN3=0
      IRUN4=0
      I=SORT(LIST,IHEAD,N,COMPAR)
      IF(IFLAG.EQ.0)GO TO 402
  404 IF(I.EQ.0)GO TO 401
C     TALLY ON CLASS
      IF(JONE.NE.IONE(I).OR.JTWO.NE.ITWO(I))GO TO 405
C     ID'S STILL EQUAL
```

```
  403 IRUN1=IRUN1+ITEST(I)
      IRUN2=IRUN2+IDLET(I)
      IRUN3=IRUN3+IUPDT(I)
      IRUN4=IRUN4+IOPGS(I)
      I=LIST(I)
      GO TO 404
C     FIRST SORTED RECORD
  402 JONE=IONE(I)
      JTWO=ITWO(I)
      IFLAG=1
      GO TO 403
C     NEW CLASS ID
  405 WRITE(6,406)JONE,JTWO,IRUN1,IRUN2,IRUN3,IRUN4
  406 FORMAT('0',20X,6HCLASS ID,24X,10HTEST TAKEN,7X,14HNO. OF DELETES,4
     -X,14HNO. OF UPDATES,10X,12HNO. OF PAGES/19X,2I6///15X,21H*****CLAS
     -S TOTAL*****,18X,I4,1X,5H******,7X,I5,1X,5H*****,7X,I5,1X,5H*****,1
     -3X,I4,1X,5H*****)
      JONE=IONE(I)
      JTWO=ITWO(I)
      IRUN1=0
      IRUN2=0
      IRUN3=0
      IRUN4=0
      GO TO 403
C     THROUGH WITH SORTED ARRAY
  401 WRITE(6,406)JONE,JTWO,IRUN1,IRUN2,IRUN3,IRUN4
      WRITE(6,400)
  999 STOP
      END
```

TEST RUN

RUN NUMBER	CLASS ID	TEST UNIT	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
196	10101 20100	4	18	0	0	0
			18 **	0 **	0 **	0 **
196	10103 20100	4	19	4	4	0
		5	23	0	0	0
		6	10	0	0	0
		8	13	0	0	0
			65 **	4 **	4 **	0 **
196	10104 30200	5	11	1	0	0
			11 **	1 **	0 **	0 **
196	10106 20100	4	21	0	0	0
			21 **	0 **	0 **	0 **
196	10204 20100	9	8	0	0	0
			8 **	0 **	0 **	0 **
196	10204 40200	11	6	0	0	0

		TEST UNIT	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
			6 **	0 **	0 **	0 **
RUN NUMBER	CLASS ID	TEST UNIT	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
196	10205 10200	5	5	0	0	0
			5 **	0 **	0 **	0 **
RUN NUMBER	CLASS ID	TEST UNIT	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
196	10211 30200	6	17	0	0	0
		7	15	0	0	0
		8	15	0	0	0
			47 **	0 **	0 **	0 **
RUN NUMBER	CLASS ID	TEST UNIT	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
196	10301 10001	2	8	0	0	0
			8 **	0 **	0 **	0 **
	RUN TOTAL		189 ***	5 ***	4 ***	0 ***
RUN NUMBER	CLASS ID	TEST UNIT	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
296	10104 30200		0 **	0 **	0 **	0 **
RUN NUMBER	CLASS ID	TEST UNIT	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
296	10106 20100	4	5	1	0	0

		TEST UNIT	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
		7	9	0	0	0
			73 **	0 **	0 **	54 **
RUN NUMBER	CLASS ID	TEST UNIT	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
8096	30401 10000					
		3	1	0	0	10
		9	4	0	0	0
			5 **	0 **	0 **	10 **
RUN NUMBER	CLASS ID	TEST UNIT	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
8096	40101 10001					
		5	1	0	0	2
			1 **	0 **	0 **	2 **
	****GRAND TOTAL****		10406 ****	240 ****	187 ****	8701 ****

CLASS ID	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
0 0	0 *****	0 *****	0 *****	0 *****
*****CLASS TOTAL*****	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
CLASS ID 10101 20100	78 *****	0 *****	2 *****	6 *****
*****CLASS TOTAL*****	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
CLASS ID 10102 30100	278 *****	1 *****	1 *****	26 *****
*****CLASS TOTAL*****	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
CLASS ID 10103 20100	145 *****	4 *****	4 *****	7 *****
*****CLASS TOTAL*****	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
CLASS ID 10104 30200	152 *****	1 *****	2 *****	30 *****
*****CLASS TOTAL*****	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
CLASS ID 10105 20100	209 *****	2 *****	0 *****	17 *****
*****CLASS TOTAL*****	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
CLASS ID 10106 20100	212 *****	6 *****	4 *****	21 *****
*****CLASS TOTAL*****	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
CLASS ID 10107 50301	48 *****	2 *****	2 *****	48 *****
*****CLASS TOTAL*****	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
CLASS ID 10108 50300	57 *****	2 *****	1 *****	45 *****
*****CLASS TOTAL*****	TEST TAKEN	NO. OF DELETES	NO. OF UPDATES	NO. OF PAGES
CLASS ID 10108 50301				

DATE: 10-23-72

ATTACHMENT 1

PROJECT: IMS

CARD LAYOUT FORM

Type of Card VOLUME OF DATA PROCESSED (CLASS)

Field No.	Field Description	Columns From	Columns Thru	No. of Columns	Coding Instructions
1	Run Number	2	4	3	
2	Card ID	5	6	2	Equal 96
3	District (4)	8	9	2	
4	School	10	11	2	
5	Teacher	12	13	2	
6	Program	14	15	2	
7	Grade	16	17	2	
8	Class	18	19	2	
9	Unit	20	21	2	
10	Tests	25	29	5	
11	Deletes	34	35	2	
12	Updates	39	40	2	
13	OPSN PGS	41	45	5	

Comments:

ATTACHMENT 2

SWRL

COMPUTER SYSTEMS
FILE/RECORD LAYOUT

SUMMATION OF IMS

TITLE: VOLUME FREQUENCIES DATE: 10-23-72

FILE ID: Output File

PROGRAMMER: Frank Gordillo

RECORDING MODE:
FIXED ☒
LENGTH 133
VARIABLE ☐
MAX
MIN

BLOCKING FACTOR:
BLOCK CONTAINS
3458 RECORDS

REMARKS:

CARD LAYOUT ☐

Print
RECORD LAYOUT ☒

FORMAT LEGEND:
△ = Blank P = Packed Dec.
A = Alpha O = Octal
N = Numeric H = Hexadecimal
X = Alpha/Num. B = Binary

RECORD I.D.
Run + Class

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Run Number & Card ID				Class ID					Test Unit				Test Taken			No. of Deletes		
FORMAT	△	N			△	N			△		N		△		N		△	N		△
POSITIONS	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
	No. of Updates																			
FORMAT	N		△																	
POSITIONS	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

☒ CONTINUED

RECORD I.D.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
			No. of Pages																	
FORMAT	△		N	△																
POSITIONS	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
FORMAT																				
POSITIONS	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

☐ CONTINUED

20 RECORD I.D.
By Class

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
						Class ID									Test Taken		*		No. of Deletes	
FORMAT	△				△	N			△				△		N	△	A	△	N	△
POSITIONS	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
		*		No. of Updates		*														
FORMAT	A	△		N	△	A	△													
POSITIONS	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

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POSITIONS	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

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POSITIONS	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

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